2009-05

Doug Williams interview

Naval Postgraduate School

Doug Williams

Doug graduated in 1953 with an MA in Maths and Physics from the University of Edinburgh in Scotland. Following graduation, he worked as Scientific Officer in the Mathematical Services Dept. of the Royal Aircraft Establishment (like NASA, Ames). This was his first exposure to computers, analog and digital, mechanical and electronic. He used Pilot Ace (NPL), EDSAC (Cambridge) and Deuce at RAE. EDSAC= Electronic Delay Storage Automatic Calculator (1949)

He says "Those were exciting times. Weekly highlights were seminars at NPL and Maths. Lab, Cambridge. . . . One of those US visitors was Richard Hamming! . . . One of the most vigorous exchanges was over automatic programming vs. machine language. It was felt by some that no automatic translator could produce machine code as good as a human programmer. Optimal coding us[ed] drum latency [you, the programmer, knew the speed of the drum memory, and how many milliseconds it would take for the data you wanted to come around again. You would design your program, and your data storage, accordingly.]"

In July, 1961 Doug began a sabbatical year at NPS, Monterey with the expectation of 6 months light teaching and 6 months research using the CDC 1604.

Doug recalls these computing names at NPS in those early days:

Seymour Cray (1960) for the commissioning of the CDC1604.

Bob Price, an SRI (Stanford Research Institute) programmer running war gaming simulations on the CDC1604 for NPS researchers; later became Chairman & CEO, Control Data Corp.

Steve Jobs (c.1977) –the hirsute version, sitting on the edge of the stage in King Hall holding the audience enthralled.

Ken Olsen, founder of DEC (Digital Equipment Corporation) He had fond memories of NPS having been turned on to EE after attending Radar School here in late 40s. In 1977, he said, "There is no reason anyone would want a computer in their home" Also, struck by the number of visiting computer company CEOs who were ex-Navy.

Grace Hopper - many visits with her 11 inch wire representing the distance electricity travels in a nanosecond. One of the first programmers in the US who wrote [a programming language] compiler, Flexo-Matic, which evolved into COBOL. In 1959 member of CODASYL (Committee on Data Systems Languages) that developed specs for COBOL, a language not identified with any one manufacturer.

Richard Hamming. Many stimulating discussions not always at appropriate times.

Aphorisms: "The purpose of computing is insight not numbers"

"Computers don't have I/O problems, people do."

Doug recalls the start of major computer-using tenant activities:

Cmdr/Capt. Paul Wolff ran Project NANWEP on NPS's CDC1604 initially, until they got their own machine. From this modest beginning emerged to-day's FNOC (Fleet Numeric Oceanographic Center), the Navy's worldwide weather central.

Manpower Research Data Center (MARDAC), Director Dr. Eli Flyer, moved to Monterey in 1984, became a user of the NPS computer services. Became Defense Manpower Data Center (DMDC) under Robbie Brandewie as excellent tenants. Mutually beneficial partnership that helped finance incremental growth of the Center's computers between mainframe changes, e.g., mass storage systems (STK silos), high-performance tape drives, additional processors, etc.

A justifiable point of pride: "Universities, particularly graduate schools, needed the biggest, fastest machine for the dollars. [NPS] had the same mainframes as universities such as Stanford, UCBerkeley, MIT, Michigan, etc. that had 10-20 times the number of students."

Doug notes the views of some of the greatest minds of those days:

Ken Olsen (DEC) "There is no reason anyone would need a computer in their home".

Thomas Watson Sr. [IBM president] In 1950s—"Five such machines will serve all of the US".

Prentice Hall, Publisher. In 1957—I've traveled the length and breadth of this country and talked with the best people and I can assure you that data processing is a fad that won't last out the year.

Doug sums up some of his major accomplishments:

"When I arrived in July 1961 the CDC1604, one of the fastest computers of the day, was used by a very small number of users submitting machine language programs on paper-tape. There was no operating system and no assemblers, compilers or utilities [like, the means to write data to storage, or to print out results]. I obtained a Fortran compiler—folklore says it was written by Seymour Cray—and began teaching classes on its use to standing-room-only audiences of faculty and students. The students then would educate the faculty—I'm sure that doesn't happen now!

I designed and started computer-oriented MS degree programs in Management Data Processing (in 1963) and Computer Science (in 1967) recognizing the DOD's need for officers educated in these emerging disciplines. These were the antecedents of today's IT and CS curricula. Also, lobbied hard for the creation of a separate CS group/Department which was formed in 1973."

Doug notes NPS had a number of firsts or near-firsts:

1. One of the first universities to have a mainframe computer that hadn't been built on campus. In 1954, there were around 10 computers in government and business.
2. The CDC1604, installed in 1960, was the world's first all solid-state computer. NPS had Model#1, Serial#1.
3. The CDC160, installed in early 60s, was the first desk-sized, mini-computer.
4. In mid-60s, the EE Dept. acquired a graphics display, custom-built by Data Display, Inc. to specifications of Prof. "Mitch" Cotton. It had a track-ball, joystick and other human engineering features now common on graphics units.
5. Among the earliest adopters of multi-access time-sharing in late 1960s, the beginning of interactive computing.

6. First operating system for micros, CP/M, was developed by Prof. Gary Kildall, CS Dept. He used CP/CMS, running on the Center's IBM360/67, as the model.